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Echiurians collected during the SAFARI 1 cruise in the Indian ocean, south of Madagascar

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Résumé. — Quatre espèces d'Echiuriens, *Arhynchite arhynchite* (Ikada), *Nellobia eusoma* Fisher, *Eubonellia longistomum* DattaGupta et *Prometor benthophila* Fisher, récoltées, dans l'océan Indien, au cours de la mission SAFARI 1 organisée par le Muséum national d'Histoire naturelle, sont décrites. Elles proviennent des grands fonds et sont pour la première fois signalées de l'océan Indien.

Abstract. — Four species of Echiura namely, *Arhynchite arhynchite* (Ikeda), *Nellobia eusoma* Fischer, *Eubonellia longistomum* DattaGupta, and *Prometor benthophila* Fisher, collected by the Muséum national d'Histoire naturelle, Paris, from the Indian ocean and sorted by the CENTOB in France, have been listed here together with descriptive notes on the species. All four species have been lifted from deep waters and this is the first record of their occurrence in the Indian ocean.

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Introduction

The four species of Echiura of the present report were collected by the Muséum national d'Histoire naturelle, France, from the Mozambique and the Crozet basins of the Indian ocean during the SAFARI 1 cruise in the region, between August 20 and September 26, 1979. The author received the material through the courtesy of Centre national de tri d'océanographie biologique (CENTOB), France, for the purpose of identification. These four species represent four genera, one of which belong to the family Thalassematidae and the three others to Bonellidae.

There are a few accounts on the echiuran animals from this part of the Indian ocean and these are largely from the coastal waters of the South African mainland and the islands of the vicinity (Studer, 1879 ; Greeff, 1879 ; Fischer, 1892, 1922*c* ; Sluiter, 1898 ; Lanchester, 1905 ; Stephen and Robertson, 1952 ; Jones and Stephen, 1955 ; Wesenburg-Lund, 1959 ; Zenkevitch, 1966, and DattaGupta, 1974). Seven of these echiuran species belong to the family Thalassematidae and two to Bonellidae. The animals of the present report have been lifted from great depths and *Choanostomellia bruuni* (fam. Bonellidae) is the only echiuran of the earlier reports which was lifted from a comparable depth (4 360 m, off Durban : Zenkevitch, 1966). All four species of this account are being reported for the first time from the Indian ocean.

List of the species of the present report

Thalassematidae

Thalassematinae

Arhynchite Sato : *A. arhynchite* (Ikeda, 1924)

Bonellidae

Bonellinae

Nellobia Fisher : *N. eusoma* Fisher, 1946
Eubonellia Fisher : *E. longistomum* DattaGupta, 1981
Prometor Fisher : *P. benthophila* Fisher, 1948.

Arhynchite arhynchite (Ikeda, 1924)

(Fig. 1 A, B)

Material : 1 female, SAFARI CP 03 ; collected 24.VIII.1979 : locality Mozambique basin, coordinates 30°30′ S 39°59′ E, depth 4 912 m.

Description

The preserved specimen is small sausage shaped and deep pinkish brown in colour with its anterior tip caved in forming a cup and posterior tip damaged. The animal could nevertheless be of the order of 27 mm in length and 10 mm across the broadest part. A proboscis is absent and mouth opens at the anterior tip in the centre of the cup like depression. Closely ventral to the mouth spatulate golden yellow tips of two ventral hooks emerge through the body wall (fig. 1 A) ; the latter is generally thick but more so at the anterior end. Papillae are conspicuous and dense at the anterior end only ; the rest of the body wall appears smooth and devoid of papillae.

Internally, except a small part of the foregut the digestive and the vascular systems are disintegrated and washed away. The shafts of the two ventral hooks have been found broken and twisted yet connected by a strong interbasal muscle, also radiating muscles from the bases of the shafts to the ventral body wall. Two gonoducts containing ova, located posterior to the ventral hooks, are thin walled and cucumber shaped (fig. 1 B). Gonostome is thin and leaf like, proximal in position, and found delicately attached to the gonoduct of the right side only. A gonostome could not be located in the left gonoduct, in all probability lost.

The specimen is badly damaged and the author arrived with difficulty at his conclusion with regard to its identity. The original description of the species (Ikeda, 1924 : 41-42) " is based on the numerous specimens preserved in the Fisheries School at Sapporo " in Japan. After the second report on the species from Japan (Sato, 1937) this is the first record of its occurrence in the Indian ocean.

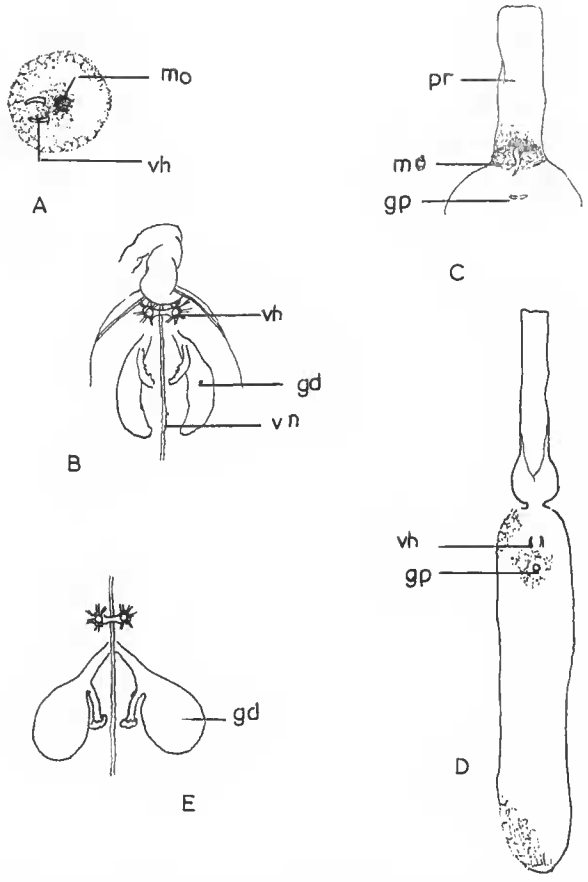

Fig. 1. — A-B, *Arhynchite arhynchite* : A, anterior tip of female × 2, polar view ; B, gonoducts ; C, *Eubonellia longistomum*, proboscis × 4 ; D-E, *Prometor benthophila* : D, ventral view of female × 2 ; E, gonoducts.

gd, gonoduct ; gp, genital pore ; mo, mouth ; pr, proboscis ; vh, ventral hooks ; vn, ventral nerve cord.

Nellobia eusoma Fisher, 1946

Material : 1 female, SAFARI CP 03 ; collected 24.VIII.1979 : locality Mozambique basin, coordinates 30°30′ S 39°59′ E, depth 4 912 m.

Description

The preserved specimen is greyish pink in colour, cylindrical in shape and measures about 25 mm in length and 6 mm across the broadest part. Mouth opens at the anteriormost tip of the body and the body wall surrounding the mouth dorsally forms a slightly elevated semicircular ring. The specimen is somewhat shrivelled and the body wall is

tough and thick with scattered irregular papillae at the anterior end. Ventral hooks are absent. Genital aperture is a transverse opening located about 3 mm away from the mouth. Internally, single gonoduct is flask shaped and located on the left side of the ventral nerve cord. The rest of the internal organs are poorly preserved.

Compared with the holotype, on the basis of which the species has been described (Fisher, 1946 : 257-259) the present specimen is smaller in size. *Nellobia eusoma* of the present collection is the second record of its occurrence and first record from the Indian ocean.

Eubonellia longistomum DattaGupta, 1981

(Fig. 1 C)

Material : 4 females, SAFARI CP 15 ; collected 12-13.IX.1979 : locality Crozet basin, coordinates 31°23′ S 61°35′ E, depth 5 595-5 610 m ; 5 females, SAFARI CP 16 ; collected 29.IX.1979 ; locality Crozet basin, coordinates 24°23′ S 58°21′ E, depth 4 890-5 043 m.

Description

The preserved specimens are of pale flesh colour. Morphology of the proboscis of the species could not be given in the original description as the proboscides of the holotype and the paratypes were found broken and lost. In the present collection in one specimen of SAFARI CP 16 the proboscis has been found complete though contracted which measures 8 mm in length and 3.5 mm in breadth, the length of the trunk being 40 mm. The proboscis is of uniform width and its anterior tip is truncated (fig. 1 C). In one specimen the broken proximal part of the proboscis measures about 16 mm in length and 4.5 mm in breadth ; the proboscis is thick and stout at the base, gradually thin anteriorly. The genital aperture is a transverse slit located 5-8 mm away from the mouth ; the rim of the slit is slightly raised and devoid of papillae.

Internally, single gonoduct with terminal gonostome is located on the right side of the ventral nerve cord. In one specimen the pear shaped gonoduct measures 17 mm in length, which is nearly 1/3 of the length of the body.

Eubonellia longistomum of the present collection is the first record of its occurrence in the Indian ocean.

Prometor benthophila Fisher, 1948

(Fig. 1 D, E)

Material : 1 female, SAFARI SI 12 ; collected 6.IX.1979 : locality Crozet basin, coordinates 32°41′ S 50°46′ E, depth 4 283 m.

Description

The body and the proboscis of the preserved specimen are uniformly pinkish brown in colour and the animal measures 57 mm in length of which the proboscis alone is 20 mm.

The maximum breadth of the cylindrical trunk is 8 mm. Body wall is thick and covered anteriorly with papillae of irregular outline which are antero-posteriorly elongated at the posterior end. Single round genital pit is located about 6 mm away from the junction of the proboscis and the trunk. Body wall is devoid of papillae around the genital and the cloacal apertures. Two ventral hooks are anterior to the genital pit ; the hooks are golden yellow in colour with dark brown spatulate tips, each measuring about 8 mm in length.

Internally, two gonoducts are transparent thin walled sacs with long neck (fig. 1 E). Gonostomal funnel is borne on a stalk which emerge laterally from the junction of the neck and the sac. Thin radiating muscles connect the hook shafts with the ventral body wall ; interbasal muscle is short. The rest of the internal organs have not been preserved well.

The present specimen is smaller than the holotype or the paratype collected from the Pacific ocean (off San Diego) at a depth of 1 955 m. Since its discovery *Prometor benthophila* of the present collection is the second record of its occurrence and first record from the Indian ocean.

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LITERATURE CITED

DattaGupta, A. K., 1974. — A new species of the genus *Anelassorhynchus* Annandale (Echinra) and a key to the species of the genus. *Proc. zool. Soc., Calcutta*, **27** : 29-33.

— 1981. — Atlantic Echiurans, Part I. Report on twenty-two species of deep sea echiurans of the North and the South Atlantic Ocean. *Bull. Mus. natn. Hist. nat., Paris*, 4e sér., **3** (2) : 353-378.

Fischer, W., 1892. — Ubersicht der von Herrn Dr. F. Stuhlmann auf Sanzibar und an der gegenuberliegenden Festlands-kuste gesammelten Gephyreen. *Jb. hamb. wiss. Anst.*, **9** (2) : 79-89.

— 1922*c*. — Gephyreen der Deutschen Tiefsee Expedition, auf dem Damper 'Valdivia' 1898-1899. *Wiss. Ergebn. dt. Tiefsee-Exped.* 'Valdivia', **22** (1) : 1-26.

Fisher, W. K., 1946. — Echiuroid worms of the North Pacific Ocean. *Proc. U. S. natn. Mus.*, **96** : 215-292.

— 1948*a*. — A review of the Bonellidae. *Ann. Mag. nat. Hist.*, ser. 11, **14** : 852-860.

Greeff, R., 1879. — Die Echiuren (*Gephyrea armata*). *Nova Acta Acad. Caesar. Leop. Carol.*, **41** : 1-172.

Ikeda, I., 1924. — Further notes on the *Gephyrea* of Japan, with descriptions of some new species from the Marshall, Caroline and Palau islands. *Jap. J. Zool.*, **1** : 23-44.

Jones, E. M., & A. C. Stephen, 1955. — A new species of echiuroid worm (*Ochetostoma capensis*) from Cape Province, South Africa. *Trans. R. Soc. S. Afr.*, **34** : 273-278.

Lanchester, W. F., 1905. — The marine fauna of Zanzibar and British East Africa from collections made by C. Crossland in 1901 and 1902. *Gephyrea. Proc. zool. Soc. Lond.*, **1** : 28-35.

Sato, H., 1937*a*. — Echiuroidea, Sipunculoidea and Priapuloidea obtained in North-West Honshu. *Res. Bull. Saito Ho-on Kai Mus.* (Zool.), **12** : 137-176.

Sluiter, G. P., 1898. — Gephyreen von Sud-Africa, nebst Bermerkungen uber *Sipunculus indicus*. Beitr. zur Kenntnis der Fauna Sud-Africa. 3. Ergebn. einer Reise von Prof. Max Weber im Jahre 1894. *Zool. Jb. Syst.*, **11** : 422-450.

Stephen, A. C., & J. Robertson, 1952. — A preliminary report on the Echiuridae and Sipunculidae of Zanzibar. *Proc. R. Soc. Edinb.*, **64**, sect. B, (22) : 426-444.

Wesenburg-Lund, E., 1959. — Sipunculoidea and Echiuroidea from Mauritius. *Vidensk. Meddr dansk naturh. Foren.*, **121** : 53-73.

Zenkevitch, L. A., 1966. — The systematics and distribution of abyssal and hadal (ultra-abyssal) Echiuroidea. *Galathea Rep.*, **8** : 175-184.